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## 1 [Research session: integration and mapping #1: Designing information-preserving mapping schemes for XML](#)

Denilson Barbosa, Juliana Freire, Alberto O. Mendelzon

August 2005 **Proceedings of the 31st international conference on Very large data bases VLDB '05**

Publisher: VLDB Endowment

Full text available: [pdf\(343.75 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

An XML-to-relational mapping scheme consists of a procedure for *shredding* documents into relational databases, a procedure for *publishing* databases back as documents, and a set of constraints the databases must satisfy. In previous work, we defined two notions of information preservation for mapping schemes: *losslessness*, which guarantees that any document can be reconstructed from its corresponding database; and *validation*, which requires every legal database to corr ...

## 2 [Research session: integration and mapping #1: Information preserving XML schema embedding](#)

Philip Bohannon, Wenfei Fan, Michael Flaster, P. P. S. Narayan

August 2005 **Proceedings of the 31st international conference on Very large data bases VLDB '05**

Publisher: VLDB Endowment

Full text available: [pdf\(241.56 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A fundamental concern of information integration in an XML context is the ability to *embed* one or more source documents in a target document so that (a) the target document conforms to a target schema and (b) the information in the source document(s) is *preserved*. In this paper, information preservation for XML is formally studied, and the results of this study guide the definition of a novel notion of *schema embedding* between two XML DTD schemas represented as graphs. Schem ...

## 3 [Advanced XML technologies and applications: A mapping schema and interface for XML stores](#)

Sihem Amer-Yahia, Divesh Srivastava

November 2002 **Proceedings of the 4th international workshop on Web information and data management**

Publisher: ACM Press

Full text available: [pdf\(204.06 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Most XML storage efforts have focused on mapping documents to relational databases. Mapping choices range from storing documents verbatim to shredding documents into relations in various ways. These choices are usually hard-coded into each storage system which makes sharing loading and querying utilities and exchanging information between different XML storage systems hard. To address these issues, we designed MXM and IMXM, a mapping schema and an interface API to define and query XML-to-relatio ...

**Keywords:** XML storage/loading/publishing, XML-to-relational mapping

#### 4 XML processing: A comprehensive solution to the XML-to-relational mapping problem

 Sihem Amer-Yahia, Fang Du, Juliana Freire

November 2004 **Proceedings of the 6th annual ACM international workshop on Web information and data management**

Publisher: ACM Press

Full text available:  [pdf\(114.33 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The use of relational database management systems (RDBMSs) to store and query XML data has attracted considerable interest with a view to leveraging their powerful and reliable data management services. Due to the mismatch between the relational and XML data models, it is necessary to first shred and load the XML data into relational tables, and then translate XML queries over the original data into equivalent SQL queries over the mapped tables. Although there is a rich literature on XML-rel ...

**Keywords:** XML shredding, XML storage, mapping techniques, relational databases

#### 5 Posters: Mapping XML instances

 Sai Anand, Erik Wilde

May 2005 **Special interest tracks and posters of the 14th international conference on World Wide Web**

Publisher: ACM Press

Full text available:  [pdf\(193.43 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

For XML-based applications in general and B2B applications in particular, mapping between differently structured XML documents, to enable exchange of data, is a basic problem. A generic solution to the problem is of interest and desirable both in an academic and practical sense. We present a case study of the problem that arises in an XML based project, which involves mapping of different XML schemas to each other. We describe our approach to solving the problem, its advantages and limitations. ...

#### 6 XAS: a system for accessing componentized, virtual XML documents

Ming-Ling Lo, Shyh-Kwei Chen, Sriram Padmanabhan, Jen-Yao Chung

July 2001 **Proceedings of the 23rd International Conference on Software Engineering**

Publisher: IEEE Computer Society

Full text available:  [pdf\(143.39 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

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*XML is emerging as an important format for describing the schema of documents and data to facilitate integration of applications in a variety of industry domains. An important issue that naturally arises is the requirement to generate, store and access XML documents.*

*It is important to reuse existing data management systems and repositories for this purpose. In this paper, we describe the XML Access Server (XAS), a general purpose XML based storage and retrieval system which ...*

**7 Views in a large-scale XML repository**

Vincent Aguilera, Sophie Cluet, Tova Milo, Pierangelo Veltri, Dan Vodislav

November 2002 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 11 Issue 3

**Publisher:** Springer-Verlag New York, Inc.

Full text available: [pdf\(241.60 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

We are interested in defining and querying views in a huge and highly heterogeneous XML repository (Web scale). In this context, view definitions are very large, involving lots of sources, and there is no apparent limitation to their size. This raises interesting problems that we address in the paper: (i) how to distribute views over several machines without having a negative impact on the query translation process; (ii) how to quickly select the relevant part of a view given a query; (iii) how ...

**Keywords:** Query evaluation, Semantic integration, Views, Warehouse, XML

**8 Structure and transformation of documents: Mapping and displaying structural transformations between XML and PDF**

Matthew R. B. Hardy, David F. Brailsford

November 2002 **Proceedings of the 2002 ACM symposium on Document engineering**

**Publisher:** ACM Press

Full text available: [pdf\(439.03 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Documents are often marked up in XML-based tagsets to delineate major structural components such as headings, paragraphs, figure captions and so on, without much regard to their eventual displayed appearance. And yet these same abstract documents, after many transformations and 'typesetting' processes, often emerge in the popular format of Adobe PDF, either for dissemination or archiving. Until recently PDF has been a totally display-based document representation, relying on the underlying PostSc ...

**Keywords:** PDF, XML, document structure transformation

**9 XML schemas: integration and translation: Logical and physical support for heterogeneous data**

Sihem Amer-Yahia, Mary Fernández, Rick Greer, Divesh Srivastava

November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**

**Publisher:** ACM Press

Full text available: [pdf\(292.27 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Heterogeneity arises naturally in virtually all real-world data. This paper presents evolutionary extensions to a relational database system for supporting three classes of data heterogeneity: *variational*, *structural* and *annotation* heterogeneities. We define these classes and show the impact of these new features on data storage, data-access mechanisms, and the data-description language. Since XML is an important source of heterogeneity, we describe how the system automatically u ...

**Keywords:** XML storage, heterogeneous data

**10 XML query and programming languages: XQuery containment in presence of variable binding dependencies**

Li Chen, Elke A. Rundensteiner

May 2005 **Proceedings of the 14th international conference on World Wide Web**

**Publisher:** ACM Press

Full text available:  pdf(242.04 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Semantic caching is an important technology for improving the response time of future user queries specified over remote servers. This paper deals with the fundamental query containment problem in an XQuery-based semantic caching system. To our best knowledge, the impact of subtle differences in XQuery semantics caused by different ways of specifying variables on query containment has not yet been studied. We introduce the concept of *variable binding dependencies* for representing the hier ...

**Keywords:** XQuery containment, variable binding dependency

**11 An analysis of XML database solutions for the management of MPEG-7 media descriptions**



 Utz Westermann, Wolfgang Klas

December 2003 **ACM Computing Surveys (CSUR)**, Volume 35 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(448.76 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

MPEG-7 constitutes a promising standard for the description of multimedia content. It can be expected that a lot of applications based on MPEG-7 media descriptions will be set up in the near future. Therefore, means for the adequate management of large amounts of MPEG-7-compliant media descriptions are certainly desirable. Essentially, MPEG-7 media descriptions are XML documents following media description schemes defined with a variant of XML Schema. Thus, it is reasonable to investigate curren ...

**Keywords:** MPEG-7, XML database systems, multimedia databases

**12 Multimedia data indexing: Looking at mapping, indexing & querying of MPEG-7 descriptors in RDBMS with SM3**



 Yang Chu, Liang-Tien Chia, Sourav S. Bhowmick

November 2004 **Proceedings of the 2nd ACM international workshop on Multimedia databases**

**Publisher:** ACM Press

Full text available:  pdf(279.92 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

MPEG-7 documents, which are primarily for multimedia information exchange, are also data-centric XML documents. Due to its advantages, the relational DBMS is the best choice for storing such XML documents. Storing XML data in relational DBMS can be classified into two classes of storage model: structure-mapping and model-mapping. However, the structure-mapping model cannot support complex Xpath-based query efficiently and model mapping approach lacks the flexible capability in representing al ...

**Keywords:** MPEG-7, SM3, relational DBMS, storing XML documents

**13 Automating XML documents transformations: a conceptual modelling based approach**



A. Boukottaya, C. Vanoirbeek, F. Paganelli, O. Abou Khaled

January 2004 **Proceedings of the first Asian-Pacific conference on Conceptual modelling - Volume 31 CRPIT '04**

**Publisher:** Australian Computer Society, Inc.

Full text available: [pdf\(366.94 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The growing use of XML mark-up language has made a large amount of heterogeneous XML documents widely available. As the number of applications that utilize heterogeneous XML documents grows, the importance of XML documents transformations increases greatly. A serious obstacle for translating directly between two XML documents, using languages like XSLT, is that a mapping between the two XML representations needs to be carefully specified by a human expert. Current research attempts to address th ...

**Keywords:** Layered Interoperability Model for XML Schemas, automating XML documents transformations, conceptual modelling, semantic matching

#### 14 Standards: SQL/XML is making good progress

 Andrew Eisenberg, Jim Melton  
June 2002 **ACM SIGMOD Record**, Volume 31 Issue 2

Publisher: ACM Press

Full text available: [pdf\(612.96 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Not very long ago, we discussed the creation of a new part of SQL, XML-Related Specifications (SQL/XML), in this column [1]. At the time, we referred to the work that had been done as "infrastructure". We are pleased to be able to say that significant progress has been made, and SQL/XML [2] is now going out for the first formal stage of processing, Final Committee Draft (FCD) ballot, in ISO/IEC JTC1. In our previous column, we described the mapping of SQL □identifier□s to XML Names, SQL ...

#### 15 Database theory, technology and applications (DTTA): On using collection for aggregation and association relationships in XML object-relational storage

 Eric Pardede, J. Wenny Rahayu, David Taniar  
March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Publisher: ACM Press

Full text available: [pdf\(159.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

XML data can be stored in different databases including Object-Relational Database (ORDB). Using ORDB, we get the benefit of the relational maturity and the richness of OO modeling. One modeling concept that can be captured is the collection. Collection structures frequently occur in XML documents especially in two relationship types: aggregation and association. However, very often when the data is stored in a database repository, the collection is flattened. We believe that preserving the coll ...

**Keywords:** ORDB, XML, XML schema, collection

#### 16 Research sessions: data integration: Constraint-based XML query rewriting for data integration

 Cong Yu, Lucian Popa  
June 2004 **Proceedings of the 2004 ACM SIGMOD international conference on Management of data**

Publisher: ACM Press

Full text available: [pdf\(240.77 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

We study the problem of answering queries through a target schema, given a set of mappings between one or more source schemas and this target schema, and given that the data is at the sources. The schemas can be any combination of relational or XML schemas, and can be independently designed. In addition to the source-to-target mappings, we consider as part of the mapping scenario a set of target constraints specifying additional properties on the target schema. This becomes particularly

importan ...

17 Web Information Management: A performance evaluation of storing XML data in relational database management systems

 Latifur Khan, Yan Rao

November 2001 **Proceedings of the 3rd international workshop on Web information and data management**

**Publisher:** ACM Press

Full text available:  pdf(104.45 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

XML is an emerging standard for the representation and exchange of Internet data. Along with document type definition (DTD), XML permits the execution of a collection of queries, using XPath to identify data in XML documents. In this paper we examine how XML data can be stored and queried using a standard relational database management system (RDBMS). For this, we propose a technique for automatic mapping from an XML document to relations within the RDBMS. We demonstrate that our novel approach ...

**Keywords:** DTD, SQL, XML, XPath, relational DBMS

18 UML and XML schema

Nicholas Routledge, Linda Bird, Andrew Goodchild

January 2002 **Australian Computer Science Communications , Proceedings of the thirteenth Australasian conference on Database technologies - Volume 5 CRPITS '02**, Volume 24 Issue 2

**Publisher:** Australian Computer Society, Inc. , IEEE Computer Society Press

Full text available:  pdf(947.72 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

XML is rapidly becoming the standard method for sending information across the Internet. XML Schema, since its elevation to W3C Recommendation on the 2<sup>nd</sup> May 2001, is fast becoming the preferred means of describing structured XML data. However, until recently, there has been no effective means of graphically designing XML Schemas without exposing designers to low-level implementation issues. Bird, Goodchild and Halpin (2000) proposed a method to address this shortfall using the 'Objec ...

**Keywords:** DTD, UML, XML, XML Schema

19 XML schemas: integration and translation: NeT & CoT: translating relational schemas to XML schemas using semantic constraints

 Dongwon Lee, Murali Mani, Frank Chiu, Wesley W. Chu

November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**

**Publisher:** ACM Press

Full text available:  pdf(321.89 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Two algorithms, called NeT and CoT, to translate relational schemas to XML schemas using various semantic constraints are presented. The XML schema representation we use is a language-independent formalism named XSchema, that is both precise and concise. A given XSchema can be mapped to a schema in any of the existing XML schema language proposals. Our proposed algorithms have the following characteristics: (1) NeT derives a nested structure from a flat relational model by repeatedly applying th ...

**Keywords:** XML, schema translation, semantic constraints

**20 Preserving mapping consistency under schema changes**

Yannis Velegrakis, J. Miller, Lucian Popa

September 2004 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 13 Issue 3

Publisher: Springer-Verlag New York, Inc.

Full text available: [pdf\(327.88 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

In dynamic environments like the Web, data sources may change not only their data but also their schemas, their semantics, and their query capabilities. When a mapping is left inconsistent by a schema change, it has to be detected and updated. We present a novel framework and a tool (ToMAS) for automatically adapting (rewriting) mappings as schemas evolve. Our approach considers not only local changes to a schema but also changes that may affect and transform many components of a schema. Our alg ...

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